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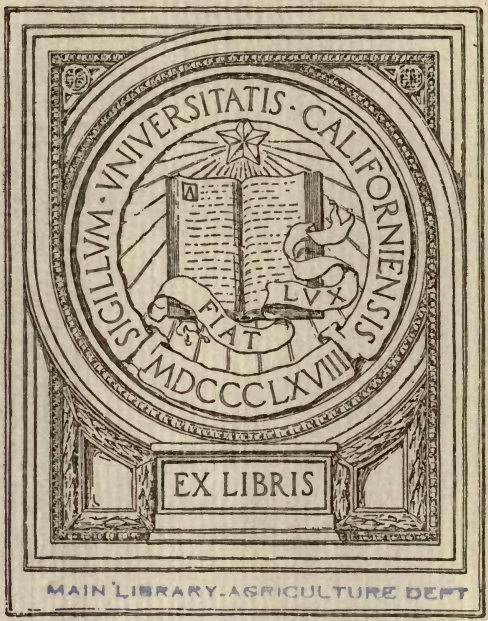

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With feelings of respect and gratitude, I remain,

Your Ladyship's

Much Obliged Humble Servant,

GEORGE MILLS.

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PREFACE TO THE SECOND EDITION.

THE very rapid sale of the first edition of my work cannot fail to be highly satisfactory to me, thereby proving that the public had confidence in me, and which confidence I trust I have not forfeited, as I therein gave faithfully my practice in the plainest manner possible. I much regret not having given a descriptive plate, but at the time I thought it unnecessary, it will now be added to the Second Edition, and also faithful extracts from my note book on forcing cucumbers from January to February inclusive, which will I trust be found useful as a reference; and I have the satisfaction of knowing that any person that will follow the directions given in my book will succeed with much less trouble than with any other system with which I am acquainted.

GEORGE MILLS.

OBSERVATIONS on forcing CUCUMBERS last season, from *December* to *February*, in my improved pit.

1841. *Dec.* 21st.—Heat in pit this morning at uncovering, 68°; plants were quite moist, I used a little too much water last night, but the shortest day was sunny, and the plants got dry in the day; a little water was given over the back hot-air chamber only, and caused a fine steam to rise which filled

the pit; the heat was 65°—there were 2° frost—little air could be given, it was a wind frost, the linings are up to the curb in front, and within one foot of it at the back; covering, a single mat only.

Dec. 22nd.—2° frost this morning, rose 4° above zero; still it has been a raw, cold, and dull day, heat this morning in pit 68°; the plants were moist and looked well, but little air could be given to pit to-day, heat did not reach more than 70°. No water was given to-day, as the plants did not get dry; a little air is given every night at 6 o'clock, and looked to at 10, and regulated according to the weather.

Dec. 23.—Heat this morning 70°, with a little air all night, and a single mat covering; it appears to be just the heat required to cause fruit to swell at this season; measured two fruits 8½ inches each, and very handsome.

Dec. 24th, 25th, 26th, and 27th.—Heat 68 to 70 at night; covering a single mat, air as usual.

Dec. 28.—Cut first brace of fruit this day, very handsome.

Dec. 30.—Dull mild day, heat in pit at uncovering 72°; some of the plants were dry and others moist; where dry, a little water was given; they had much air during the day, and a little water was given at four o'clock, all over the leaves, and hot-air chambers.

Dec. 31.—Fine mild dull day; heat this morning 70°; plants got dry, and the flues were watered all round the pit, and it filled it with steam; plants seem to enjoy it much.

1842. *Jan.* 1st.—Plants in fine state this morning, heat 70°, the day was dry and mild; one inch of air was given, and a little water on the hot-air chambers, or flues, at 4 o'clock in the afternoon.

Jan. 2nd and 3rd.—Cold and frosty, east wind heat 68°; watered round on the flues at 4 o'clock, plenty of steam, and plants looked well.

Jan. 4th.—Heat 64°, mercury 10° below zero, little sun in the day, and plants got dry; water was given round the hot-air chambers.

Jan. 5th and 6th.—Heat in pits at uncovering time 73° each day; plants in fine state; a little water given over the hot-air chambers filled the pit with steam; cold east wind, but little air could be given; water was sprinkled over the back hot-air chamber at 4 o'clock in the afternoon.

Jan. 8th, 9th, and 10th.—Three days have been dull, damp and cold; but little water was used; once a day, sprinkled on the hot-air chambers; heat 70° to 74°.

Jan. 13th.—It has snowed the whole day, heat 68°; the pit was covered with *hay* and no water given, and but little air.

Jan. 14th.—Sunless day, heat 71° ; a little water was given at 4 o'clock.

Jan. 15th.—Little sunshine, heat this morning 75°; water at 4 as usual.

Jan. 16th.—Heat this morning 72°, plants in a fine state, caused by the little sunshine yesterday, a little water at 4 o'clock.

Jan. 17th.—Heat 72° ; plants good, a little water sprinkled over the hot-air chambers once a day, unless the heat is very strong is better than more. I wish to see the plants a little moist in the morning, but a lodgment of damp on them is bad, which is caused by want of heat and air ; if short of heat give no *water*—but it is bad to be short of heat for any length of time ; if the flower at the point of the fruit damps off before the fruit is well formed it never makes a good fruit. I attach great importance to night heat, air, and moisture ; too much night heat causes the fruit blossoms to open prematurely and such fruit never swells kindly ; too little heat causes the blossoms to damp off, and then the fruit never swells ; a strong heat in the front lining is good.

Jan. 18.—The day dull and cold, 2° of frost, night and day heat 72° ; plants seem to enjoy it, it appears to be just what they like ; too much water is *bad*, if at covering-up time the heat is 70° *well*, it will increase 3° or 4° before the morning, with a little air at each light and a single mat covering, which is all that should be used, unless great necessity from extreme bad weather ; 74° is a fine heat in the morning when the pits are uncovered.

Jan. 19th.—Five days and no sunshine, dark with little frost ; fruit has swelled slowly at the expense of the plants ; I never witnessed slower growth.

Jan. 20th, 21st, and 22nd.—Weather dull ; young fruit seems to require a little sunshine to start them after flowering, once started they will swell in dull weather.

Jan. 23rd.—Sun shone to-day a few hours, but the wind was excessive cold ; a little extra covering was used, and but little water given ; 10° of frost on the morning of the 24th, the coldest night up to this time.

Jan. 24th.—Heat this morning 75° ; great improvement in the plants from the few hours' sun yesterday ; the sun has shone out *the whole day ;* heat up to 90° to-day—the mercury has been below zero the whole day in the shade ; the plants had one inch of air at each light, and a small pot of water was given to each light over plants ; and hot-air chambers.

Jan. 25.—There was a fall of snow in the night heat in pit at 10 at night was 75°; a little more air was given, there was

4° frost; the wind blew a gale about two in the morning, and part of the air was taken off; heat this morning 72°; a little sunshine to-day, and a little water was given just before covering up.

Jan. 26th and 27th.—Heat each morning 74°, a little sunshine each day; a little water sprinkled on the hot-air chambers before covering up.

Jan. 28.—Heat this morning 80°, sunny day; water was given all over the plants, fruit swelling fast.

Jan. 29th.—Heat 75°, day mild; one inch of air at each light all day, a little water before covering up.

Jan. 30th and 31st.—Heat each morning 76°; plants growing fast and swelling their fruit fine; the season is so changed by the increase of light that there is comparatively little difficulty, still they require great attention, and with that they will now make good progress.

Feb. 1st.—Heat at uncovering-time 74°; there is good bottom heat, the back linings are one foot below the curb, the front lining up to the curb, covering a single mat only, *no other covering ought to be required.*

Feb. 2nd and 3rd.—Heat each morning at 9 o'clock 75°; with half an inch of air all night, calm and mild, a little water was given each day over plants and hot chambers.

Feb. 4th.—Heat this morning 80°; it was too much, 74° would have been better, a little water was given and air, *it was a calm mild morning.*

Feb. 5th and 6th.—Heat each morning 74°; a little water given each day just before covering up at night.

Feb. 7th, 8th, and 9th.—Heat each morning 74°; a little water was given each day just before covering-up time, front linings up to the curb, back one foot below, covering a single mat only, little sunshine, fruit swells very fast.

Feb. 10th and 11th.—Heat each morning 74°; a little water was given all over plants and flues at one o'clock each day.

Feb. 12th, 13th, and to the 21st.—The heat and treatment the same as above, and as the strength of sun increases the linings are to be lowered, observing *always to keep a good bottom heat.*

GEORGE MILLS.

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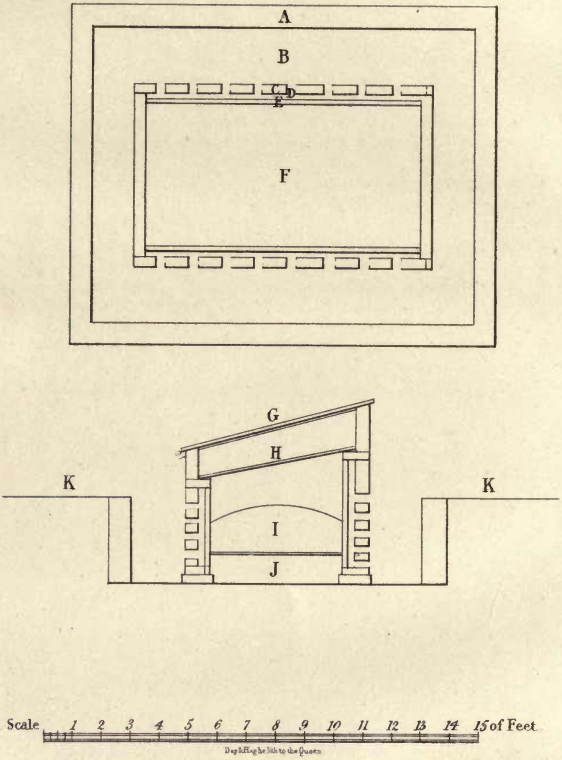
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Scale 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 of Feet
Day & Haghe lith to the Queen

Reference to Plate.

A. *Nine inch wall enclosing Dung Linings.*
B. *Cavity for Dung Linings.*
C. *Five courses of four inch work in Pigeon holes.*
D. *Hot air Chamber 2½ inches.*
E. *Brick on Edge.*
F. *Bottom of Pit.*

G. *Rafter.*
H. *Trellis on which to train the Plants.*
I. *Mould for Plants to grow in.*
J. *Filled with large wood.*
KK. *Ground level.*

ON THE CULTIVATION OF

THE

CUCUMBER.

CHAPTER I.

ON THE CULTURE OF THE CUCUMBER UNDER HAND-GLASSES.

The first consideration is to procure seed suited to open air growth, as there are several sorts that will not come to perfection, in ordinary seasons, under hand-glasses. There are other kinds very productive when propagated in this way; two of which I shall notice on account of having used them myself. These are the Old Southgate and the Gherkin; the former of which should be sown on the 15th of April, in a hot-bed; and the latter may be successfully raised under a hand-glass, in a bed prepared in

a suitable place in the garden, about the 15th of May. Both these cucumbers are cultivated for pickling.

Before the seeds are sown let them be put into a basin of water for about two hours, to test their worth. Those that are good will sink to the bottom; but the bad and defective seeds will float on the surface. Sow as many of the approved seeds as will supply your wants, one plant to a hand-glass being better than more; but taking care to have a few plants to spare rather than run short of the number required. Twenty seeds may be sown in a thirty-two size pot, if requisite; that is, in a pot nine inches in diameter and nine inches deep; and when the seeds are sown, let the pot be placed in a heat of from 50° to 60° (Fahrenheit) which will be sufficient; as plants raised in gentle heat will come up stronger, than if grown in a higher temperature, and they will be better fitted for out-door purposes.

The day the seeds are sown, prepare a bed for

a hand-glass, which will cover ten plants; or two beds, if you have twenty plants; and so on in proportion, according to the number required. These beds are the out-door seed-beds, for the plants to be grown in previous to their removal to the fruiting bed, which is to be prepared for their reception as soon as they are fit for it.

The out-door seed-bed is to be made on the surface of hard ground, commencing with a layer, an inch thick, of half-decayed rich manure; the layer to extend one inch beyond the hand-glass every way. Over the manure put two inches of good rich soil; turfy loam well chopped and heath mould, in equal proportions, are the best. When the bed is finished, put on the hand-glass, and keep it close, covering it every night with hay six inches thick, and over all a mat; as these coverings will retain the heat imparted to the bed during the day by the sun, through the hand-glass. As soon as the seed-leaves of the plants in the hot-bed are expanded, they will be

fit to transplant into this bed; which is to be done by turning the earth and plants together out of the pot, care being taken to retain every root, if possible, without injury.

The bed will take ten plants, set at proportionate distances from each other, so that the hand-glass may cover them properly; should the soil be deemed too dry, a little water may be given from a fine-rosed watering-pot as soon as planted, although with caution; bearing in mind, that the dependence is on the heat of the sun and covering, there being no bottom heat. Give air freely during sunshine, whereby the plants will grow strong, and become possessed of powerful stems. Should the season be wet, it will be necessary to stir the surface of the soil in the bed between the plants occasionally, and to add a small quantity of dry soil thereto after so doing.

With proper attention, the plants will be fit to stop in about fourteen days after they have been planted out into the seed-bed; and this

is done by taking off the leading shoot *one joint above the seed-leaves*, which will cause them to break afterwards much stronger than by any other mode of stopping. Should more than one hand-glass be used, the beds must be kept six inches apart to admit of proper drainage.

The fruiting-bed should be prepared in the following manner, and placed in the most sheltered part of the kitchen-garden. Dig a trench about two feet deep, (if the soil be dry, and will admit of your so doing,) three feet wide, and of sufficient length to allow each plant four feet. Let it be filled up well with fermented horse-dung, tan, or leaves, to the height of two feet six inches, and upon this foundation lay about eighteen inches of good soil, such as recommended for the previous bed, (see p. 3). When the mould and glasses have been on a few days, and the bed has become warm, take up the plants from the seed-bed, by forcing the transplanter under the dung, down to the hard ground, and with your hands part the plants from each

other, as the mould and the manure, in which they have grown, will be full of roots. Separate each plant with its proportionate quantity of soil, taking care not to injure the roots; then convey the plants carefully to the fruiting-bed, and plant them singly, as previously recommended, four feet distant from each other. Should the soil be dry give a little water, and if the nights are cold, cover with a mat only, till the plants begin to grow; which they will do rapidly when their roots partake of the warmth of their new habitation, aided by the now increased heat of the sun. Let them be sheltered from the strong winds as much as possible; which I have always carefully done by planting double rows of beans on the south side, and the like of tall peas, on the back of the bed. Having got the plants well planted and sheltered, the next consideration is the giving of air and water; the management of which must be left to the judgment of the person attending them, as it is not possible to lay down unerring rules

for guidance in these particulars—further, than that extremes are to be avoided; giving a little water and often, and air whenever it is possible to do so.

The cucumber makes great progress in the open air in close calm days, especially when thunder and rain are prevalent; clearly evidencing thereby that it delights in a moist and warm atmosphere.

Pruning and dressing are matters of the utmost importance to the well-doing of the plants. Stop them, as before directed (see p. 5), at the joint above the seed-leaves. They will generally make, from that method of stopping, three shoots; one of which is to be stopped again at the second joint, which will cause it to break afresh; thus giving four runners, the number required, to be trained towards the four corners of the hand-glass; which must be raised by degrees as the shoots advance, first a little on the south side, and soon afterwards all round. These shoots are to

be trained outwards, under the corners till they reach within a foot of the outer edge of the bed, and then stopped. After this they will again break, and throw out lateral shoots, which will soon extend, as they should be permitted to do, to the outside of the bed, and will produce fruit in abundance. After a while, however, these laterals will multiply so rapidly, that they must be thinned; but it is better never to allow them to become thick, from daily attention and constant stopping. This operation ought, invariably, to be performed with the finger and thumb; because when cut with an instrument the wound does not heal, and the lateral generally dies back to the next joint; which is not the case when the shoots are pruned or stopped by hand.

When the laterals are thinned, three or four should be left on each of the four leading shoots adverted to, and the others should be taken off close to the main stem out of which they grow; you will then have twelve or sixteen

runners bearing fruit on each plant, of various ages, and producing as many fruit as the plant is able to support. Do not let the plant extend beyond its bounds of four feet, it being necessary that its vigour should be thrown into the fruit, and not wasted in useless vine and unfruitfulness, to say nothing of the quality of the fruit, which can only be fine under proper management.

The *Gherkins*, or short cucumbers, recommended to be sown on the 15th of May, are to be treated as those under hand-glasses, except that when they are planted out, no glasses are used to cover them.

The mode of planting the Gherkins is as follows:—As soon as the seed-leaves are expanded, let the plants be set in rows, two feet being allowed between each plant, and four feet between the rows. Care must be taken to keep the plants thin, and, above all, sheltered from strong winds; and they should be watered slightly, but often, according to the weather.

Should the nights be cold, as frequently happens at this time of year, set a large garden-pot reversed over them; and do so, likewise, when the sun is very hot in the middle of the day, till the plants are well established.

CHAPTER II.

ON THE CULTIVATION OF CUCUMBERS ON COMMON DUNG BEDS WITH ORDINARY FRAMES.

The success of cucumbers grown in hot-bed frames, depends greatly on well preparing the dung, before making it into a bed; for if the dung be not properly prepared, the air of the bed will be impure, which is greatly prejudicial to the growth of so tender an exotic as the cucumber. It is evident that this preparation must take place before the bed is formed, as afterwards it cannot be disturbed; and unless the manure has been properly prepared, it will, when formed into a bed, ferment to what is termed a burning heat, and it will afterwards become dry and mouldy, to within a few inches of its surface, from which a noxious vapour will arise, to the certain destruction of the plants, in

conjunction with the injury they will experience from the excessive heat.

Previous to the horse manure being made into a bed, let it be thrown into a heap; and as soon as the vapour rises, and the whole mass has become well heated, let it be turned, taking care that every portion be well separated and shaken during the operation, otherwise the fermentation will not be regular. When the dung has been turned over and well shaken, the heap must be left till it again becomes hot, which it will do in a few days, when the operation of turning and shaking must be repeated; I have it turned once a week for a period of about eight weeks, before the expiration of which it cannot become quite sweet, especially if fresh when the working of it commenced. I wish this to be particularly attended to, as, in a communication made by me to the Horticultural Society of London, I named six weeks as being sufficient, in my opinion, for the preparation of dung for cucumber beds; but further expe-

rience has convinced me that the period of eight weeks is better.

Should the dung be taken from old linings which had been previously worked, it will answer the purpose without further preparation, provided it retains sufficient strength to produce fermentation when made into a bed; otherwise it will not become sweet.

This seed-bed should be three feet high at the back, and two feet six inches in front; and when the lights are put on, eight or ten days should be allowed for the bed to sweeten before the seeds are sown; during which time the surface of the bed should be forked over every other day, about a foot deep; and should it appear dry, as much water should be given as will make it moderately wet. Air must be admitted by raising the lights at the back with a wooden wedge, according to the quantity found necessary to be given, to admit the steam to pass off freely.

In order to prove whether or not the bed be

sweet, shut the lights down close for three or four hours; then take a lighted candle in a lantern, push down one of the lights, and put the candle and lantern into the frame, and if the candle continue to burn, the bed will be in a fit state to receive the plants or seed.

As to soil it is well known that cucumbers will grow in any soil, if it be moderately light and rich, and supported by proper heat and moisture, in the summer or spring months; but in winter I have found the purer the soil the better.

In the year 1811, I used the turf or peat obtained from Wanstead Flats, in Essex, which contained a great quantity of white sand. This turf was chopped with a spade moderately small but not sifted; and in this the plants were grown without the admixture of any other soil. The plants thus treated proved as fine as I have ever had them since; and I cut fruit from them, in perfection, in the first week in February. The frames were raised in June to

inure the plants to the open air; and at the end of that month the lights and frames were taken away to cover melons, (which had been propagated under hand-glasses). After this the cucumber plants were trained over the top of the linings, and continued to produce abundantly till October, which is ample proof that the soil was what they liked.

Peat-soil may be objected to as not being sufficiently rich; but when placed on sweet fermenting dung, the roots will help themselves to food when the plants require it, and are swelling off fruit. I have tried numerous experiments with soils, variously mixed, from the year 1811 to the present time; and I am perfectly satisfied that peat *alone* is *best,* and I am now (January, 1841) using it on dung beds.

Peat, however, varies greatly in quality; and that which I prefer is found lying on a substratum of gravel, and not more than three or four inches thick. It neither requires preparation, nor to be kept before using; but it may

be set to work immediately on obtaining it, which is my method of proceeding. Some may ask why, in 1818, I recommended a mixture of leaf mould with the peat, when, in 1811 I found it answer so well without? My reply is, that, like many others, I was not satisfied with doing well, but wished to do better; and I thought that enriching the peat with vegetable mould would improve it. Peat-earth alone has, however, unquestionably obtained the mastery with me over every other soil for the cucumber on dung beds in winter forcing.

Let the seed be proved as before directed, (see p. 2), and then sown, according to the number of plants required, on Michaelmas Day, the 29th of September, if for early fruit. Nine seeds may be sown in a wide-mouthed thirty-two size pot, or one nine inches in diameter, and nine inches deep: and let them be placed round the pot near the outside. The earth should be peat, finely sifted, and a lump of the same soil should be placed at the bottom of the pot for

drainage. Let the seeds be covered half an inch, and the whole pressed moderately firm. The pot must then be plunged about half its depth into the dung bed; and if a little sweet tan has been laid on the surface of the bed for the pots to be plunged in, so much the better. In four or five days the plants will appear above the earth in the pot, and then, they should have plenty of air during the day, and a little all night: from 60° to 70° of heat will be sufficient, without sun, and during sunshine from 75° to 80°. When the plants are clearly above the earth, let the pot be set on the surface of the bed, as the heat there will then be enough for their roots. A little lining will now be necessary round the bed. Some half-decayed manure, damaged hay, or anything else that will ferment a little, but not too much, should now be supplied, so as to draw a moderate heat round the frame, and it should be raised about two inches above the level of the bed. This lining will be sufficient to dry the plants, and to

keep up a sufficient internal temperature to admit of air being given regularly. The plants should remain in the seed pot till their stems are a little hardened, and the third leaf discernible; after which they will bear potting off singly into fresh pots, which should be forty-eights, which are three inches in diameter and four inches deep; the pots, if not new, must be well washed, or the plants will not turn out properly when they are to be transplanted; and the earth will adhere to their sides, to the great injury of the roots. Let the soil to be used in transplanting be moderately fine, but not sifted, and put a piece of turf, as before recommended, (see p. 16), at the bottom of each pot for drainage. The seed-leaves of the plants should be a little above the top of the pots, and the earth should be within an inch of the top, in order to allow of a little more being added, so as to cover the roots when they show themselves on the surface.

The best time for potting off is between three

and four o'clock in the afternoon; as after that time the plants are not likely to be exposed to so much light as to cause them to flag. They will do well without air for one night after transplanting. Let the top of the plants, when they are returned to the bed, be within six or eight inches of the glass; and as they increase in height lower the bed, so as to keep them at all times about the same distance. Water as may seem requisite; there being little danger, however, of giving too much to peat-earth, as it will only retain a moderate supply.

If the season be dull and wet, a little must be added to the width and height of the lining, so as to keep the heat from 65° to 75°; when this is the case, the plants can always be dried once in the day, which should be accomplished, if possible; but a fine moisture is to be desired upon them in the morning, as it is a sign of health. When the third leaf gets perfectly developed, a leading shoot will rise out of its stem, which, as soon as it is clearly formed, should be

pinched off; its removal will give strength to the plant, and will cause it to throw out fresh shoots from the base of the seed-leaves. These shoots are allowed to grow until they are two joints in length, when they must be stopped by being pinched off with the finger and thumb to *one* joint.

When the pots are filled with roots, the earth in which they grow will become matted together so as to form a ball; and it will then be necessary to repot the plants into thirty-two sized pots, which are six inches in diameter and six inches deep, as they will then require more room. These pots, as before mentioned, must be new, or if not so, they must be washed clean and dried; and the same soil and drainage must be used in transplanting as on the former occasion. As turf only is used, there will then be no trouble or danger of breaking the roots when they are removed from the pots into the fruiting bed. If the plants are perfectly right and well established, the whole of the earth in which they

have grown will be filled with white-looking roots, and will present a fine healthy appearance.

Let each plant have three good shoots or breaks, stopping them alternately, as before recommended, at every joint. The shoots must be stopped alternately, as, if all the three were stopped at the same time, the growth and progress of the plant would be unnecessarily checked and injured. On this account you should never stop a second leader or shoot till you see a break coming forward on the one first stopped.

The next consideration is the description of frame suitable to winter use; the making of a bed for the plants to fruit. The one I shall recommend (although any the grower may possess can be applied), should be four feet wide by twelve feet long, with three lights; and it must be two feet deep at the back, and one foot six inches in front. It should be made of good inch and a-half yellow deal, and so put together as to be proof against the entrance of steam; and the lights should be well glazed with narrow

laps, and well puttied wherever the squares do not lie close. If the squares are large they will be preferable, inasmuch as they will admit more light, which is important during the winter months.

Having previously given instructions as to the preparation of the dung for the seed-bed in p. 12, I need not repeat them. The rules there laid down for the seed-bed must be followed in the case of the fruiting-bed.

A situation well sheltered from wind is important; as well as a position where the greatest quantum of sun can be obtained. Should the soil be dry, and if it will admit of the bed and linings being sunk two or three feet under the surface, it will be greatly advantageous; as the manure will ferment much more regularly when protected from the winds, and the frames being thus reduced in height, will be the more easily managed, as the interior of the bed can be reached without the assistance of steps, or a ladder. Should the ground require draining, I

would recommend its being done, in order to secure the advantages pointed out as arising from sinking the bed.

If my suggestion as to the size of the frame be adopted, the excavation for the bed must be fifteen feet six inches long by eight feet wide; and in order to make it complete, a nine-inch wall should be built all round to keep up the soil, which will also assist greatly in regulating the heat of the bed by keeping the manure from coming in contact with the cold earth. The excavation is made large, because the bed should be three inches wider than the frame; and there should be an additional space of eighteen inches between the bed and the wall for linings, which will be required of considerable thickness for a frame of four feet. Do not let the walls inclosing the excavated space be higher than the surface of the surrounding ground, in order that the linings may be more conveniently turned.

Commence the erection of the bed by laying on the ground, nine inches or a foot thick, brush-

wood or the loppings of trees, four feet six inches wide, and twelve feet six inches long; on the wood lay a little long litter to keep the dung from falling into it, as this would stop the drainage and prevent the bottom heat from working under the bed. Upon the litter place your manure, carefully shaking it as you proceed, and keeping the surface regular, by beating it down with a fork as you advance, but do not tread it. The manure should be four or five feet high at the back, independently of the wood, and six inches lower in front. When the bed is finished, put on the frame, and keep the lights carefully closed till the heat rises; then give air, in order that the rank steam may pass off; fork over the surface every other day, as directed for the seed-bed, and as the heat decreases give less air. If the dung with which the bed has been made has undergone the preparation directed, it will be fit to receive the plants in about fourteen days. Before transplanting, however, prove the sweetness of the manure with a candle and

lantern, as pointed out for the seed-bed ; and if satisfied on this important point, from twelve to eighteen inches thick of peat-earth may be put on, to form the hillocks for the reception of the plants ; taking care that as little as possible of the surface of the bed be covered therewith, for the less heat there is confined under the mould, the less liable will the roots be to receive injury ; independently of the value of the sweet steam from the dung bed, which should be allowed to rise as much as possible round the plants—it being what they delight in, and also of the utmost importance in drying them. After the mould has been in the frame twenty-four hours, it will be sufficiently warm for the plants to be ridged out. To do this, make a hole in the top of each hillock, and place the pot containing the plant in it ; you will then be able to judge as to the proper distance it should be from the glass, which may vary from six to nine inches. Having determined this point, turn out of the pot, by reversing it, the plant with its ball of earth

entire, and, holding the surface of the mould in one hand, and the pot with the other, gently tap the rim against the edge of the frame, when the plant will drop out without losing any portion of the earth or injuring the roots, if the pot was properly cleaned previous to its being planted. Then drop the plant into the hole in the hillock, and press the mould firmly round the ball of roots; the earth of which should be in the same state of moisture as that into which it is to be planted, otherwise it will not properly receive the watering, when poured upon it, as it will require to be once or twice, from a pot without the rose, until the roots extend themselves into the fresh soil; after which the whole of the hillocks should be watered from a watering-pot with the rose on, whenever requisite, choosing a fine sunny morning for the watering, that the surface may become moderately dry by the afternoon. The seeds for these plants should be sown on the 29th September, and the plants should be ridged out on the 1st November.

The next consideration is a temporary lining of some prepared material, as directed for the seed-bed; for the purpose of carrying off the excess of moisture, and keeping up the necessary heat within the frame: procure some stakes, and let one end be thrust into the bed horizontally, on a level with the wall or ground-level, while the other end rests on the wall surrounding the cavity; then let a quantity of long litter be laid on the stakes to prevent the manure falling through them, and upon this build a lining till it reaches three or four inches above the surface of the bed, inside the frame, which will give sufficient heat for a time. The object of allowing two or three feet under the lining is to prevent a burning heat rising in the bed. A little air must be given during twenty hours out of the twenty-four, regulated as follows:—When you uncover the bed in the morning, the night air must be taken away; as the external air coming in contact with the glass, will cause a depression of the internal

heat, but the putting down the lights will sufficiently counteract its bad effects. Should the heat of the bed be low, and an increased warmth be requisite, let the unoccupied surface of the bed be forked over, about six or eight inches deep, either back or front; and from this a fine steam will arise, which will be greatly beneficial to the plants; and when air is afterwards given, it will materially assist in drying them; which, as before remarked (see p. 19), is necessary to be done, if possible, during the day. In an hour or two after uncovering in the morning, let a little air be given, reference being had to the state of the weather; and again let it be gradually increased, after the lapse of a similar period, up to twelve o'clock in the day. About one, lower in part; and at three or four, shut down till six, when you should again give air, the heat then should be about 70°, and the plants dry. At eight or nine, regulate for the night, according to the heat; and so let it remain until the next morning, unless there

should be a sudden change in the weather, as occurred on the night of the 12th of November last; air was then given at nine o'clock when it was calm, and foggy, and the manure fermenting rapidly; but at three in the morning of the 13th, it blew a gale, so the air was taken away, by shutting down the lights *at that hour*.

From the hillocks of earth, in which the plants are planted, being small, the roots will fill every part of them in a week or ten days; consequently about two inches of fresh earth must be added round them. As the roots show themselves, care is to be taken to keep up the heat, by additions to, and turning the linings. When the bed inside the frame becomes dry, from the heat of the linings, let it be sprinkled when the air is taken away in the evening; and this will cause a fine steam to rise, greatly beneficial to the plants. For some years I conceived that the plants were assisted in growth and luxuriance by the *steam* which arose from the well-prepared manure of the bed, more than

from the watering alone; but since I have grown them on the trellis, from which all steam is excluded, and where they grow with equal vigour, I have given up the opinion, as not founded on fact.

If manure be not well prepared before it is made into a bed, it cannot be done afterwards; nevertheless, I will describe the best method to be adopted to obviate the evils that will arise from want of preparation, as much as possible. It frequently happens that after every attention has been paid to the preparation of manure, in the opinion of those under whose management the preparation has been conducted, that the heat will be so great as to be injurious to the plants. In such cases the manure becomes mouldy and dry to within a few inches of its surface, destroying the roots as high as it rises in the earth.

This description of heat has been perplexing to many; inasmuch as at first the plants have gone on well, so long as the bed continued

moist, and the thermometer has indicated only a proper heat; but it must be borne in mind, that it is not the quantity of heat that injures the plants, but the quality. It is a general, but mistaken impression, that if a bed appears dry and white near the surface, it is attributable to too great a bottom heat; but such is not always the case, for it often happens that the destructive heat is contained within a few inches of the top of the bed; and, consequently, that it may generally be corrected by removing the dung on the immediate surface, till you come to where it is dry and looking mouldy. When this is the case, fork the dry mouldy part over, and give it as much water as will make it moderately moist; then return the dung removed from the surface to its proper place. When the whole of the surface has been dealt with in this manner, add to the tops of the linings, with a view of counteracting any injurious effects that may arise to the plants from the watering which the bed has been subjected to. A little additional covering

may also be found necessary; and it may possibly be requisite to repeat the turning over within the frame, as well as the watering, in a day or two after the first. So long as the burning qualities continue, the plants will not do well; it is necessary, therefore, to get rid of the evil as soon as possible in the way pointed out; care being taken not to over-water, otherwise the bottom of the bed will become so much saturated with moisture as to be difficult to dry, and as would occasion it to throw up a sour and unwholesome steam, to the great injury of the plants.

There are other cases in which the bed may not be sweet, from too great haste having been used in putting together the materials of which it has been formed; but there may be no burning qualities in it, and if not in a very bad state, the plants may be preserved in a heat of from 65° to 75°, by giving air at all times, to allow the impurities to pass off freely.

Too much bottom heat there cannot be, if it

is moist and sweet, provided, indeed, it does not destroy the roots of the plants, which it will not readily do under the precautions pointed out, of not covering the surface with soil beyond the hillocks in which the plants grow. The heat of the dung will then escape freely; and as the roots, in the hillocks adverted to, are above it, they will not easily be injured by pure heat. A stick thrust into the bed about twelve inches below the surface, and felt occasionally, will be a good guide as to both heat and moisture.

On the Linings of Cucumber-beds, and the Management of them.—Linings should be turned over once in eight or ten days, to keep them in a regular state of fermentation, especially from November to February, inclusive. They should not, however, be all turned at once; and if the back lining is turned, I will suppose, on the first or second, the frontage should be done on the fifth or sixth; so that one-half is turned in five days. The ends will not require turning so often, provided the heat keeps up to what is necessary,

according to the season. To dry the inside of the frame in December, January, and February, let the linings be four or five inches above the level of the surface of the bed, which will be sufficient; in March and April they may be lowered in proportion to the increased power of the sun's heat.

It may appear unnecessary to some persons to have the linings turned so often; but I beg to remark, that on the lively heat emanating from them, the well-doing of the plants depends, especially when the heat of the bed begins to decline; and in proportion as attention is bestowed on them, will be the success of the cultivator. If they are allowed to lie undisturbed until they heat themselves dry, they become useless; and the same effect is produced if they get overcharged with moisture. In both cases, if not rendered entirely useless, they will take so long a time to recover their heat, as to render them next to valueless; for where a warmth is requisite, in addition to that of the

bed, the plants may be lost in the interval between the turning and re-rising of the heat. During the operation of turning, should there appear any part too much decayed, let it be removed, and its place filled with fresh linings, which should be put on the *top* of the old, in order to draw up the heat from it, and to keep up a good warmth round the frame; besides, when the new linings are above the bed, there will be no danger of their rank steam getting to the plants. When the linings are again turned, the fresh manure applied, must continue at the top; and, if necessary, some more must be added to it, in order that the right height may be preserved. It must, however, be observed that the new linings should never be allowed to mix with the old ones until they have become quite sweet; for you must, on no account, allow rancid heat to be confined at the bottom of your linings. Attention to these directions must be continued until June, if it is desired to keep the plants in a healthy state; and although

after the month of March the turnings need no be quite so frequent, a good warmth must be kept up, or the plants will not swell off their fruit kindly. Indeed, at an advanced period of the season the roots will have got down into the dung, and so soon as that ceases to heat, they will perish from excess of moisture.

Watering frequently, and in small quantities, as before observed, is the proper way to keep the plants in a sound state; but in the winter months, from the moisture of the fermenting material, and the absence of solar heat, they will require but little from the water-pot. The surface of the bed, near the frame, will occasionally become dry from the heat of the linings passing upwards through it; and when that occurs, let it be sprinkled with water through a fine-rosed pot, just before covering up; and on fine mornings, about ten o'clock, give to the soil in which the plants are growing a little water in a tepid state. In November, December, and January, little water will be wanted, but in

February, March, and April, more may be given; always, however, in the morning, and only when there is a prospect of the plants becoming dry by covering-up time. It is a bad practice to water late in the afternoon, even in April, May, and June, as the confined air, during the night, causes the damp to settle on the blossom of the fruit, when it destroys the pollen; and fruit so injured will seldom swell freely. If the soil within the frame be moderately moist, it will be sufficient for the night without late waterings. Where a doubt is entertained on this point, give a little to the sides of the frame, and not to the plants. In dull weather never water the plants, but the mould only.

Keeping the cucumber plants regularly stopped is of the utmost importance; and it should always be done, as previously noticed (see p. 8), with the finger and thumb. The shoots should never be suffered to get into a crowded state, otherwise they will become weak

and unfruitful; and their fruit, such as they will bear, will be of a small and inferior kind. Four good breaks or runners, stopped alternately, will be ample; and two fruit are as many as a strong plant ought to swell at one time.

Moulding up is another point which demands special attention, and which must be done, if the grower means to excel in his undertaking. As the roots show themselves through the hillocks of earth, let them be covered with an inch or two of the soil recommended; placing more between the hillocks than elsewhere. This is done in order that the hillocks may meet and form a ridge along the middle of the bed by the end of December; but care should be taken to keep the sides clear of mould, to admit of the heat of the linings rising through them, to give that lively heat within the frame, which is usually called top-heat, and which is necessary for the plants, as it causes them to dry in the day, during the most unfavourable weather, and yet gives them steam-moisture by night.

The whole of the bed should not be covered with earth until the end of March; more particularly the front of it, for a breadth of at least three or four inches. After that time, however, the whole may be moulded, as the heat of the sun will have sufficient power to dry up the evaporation therefrom, so as to prevent its becoming injurious.

The covering at night is the next point to be dealt with. As soon as the heat of the bed declines to about 65°, and when all danger of overheating is passed, use a single mat, and then a little hay, spreading it on the glass about one inch thick; and commencing about the 20th November. This covering should be thickened as the cold increases; and when the weather is very severe, double mats should be used.

When the season turns, the days lengthen; and as the sun's heat, during the day, aids in warming the bed within the frame, discontinue the covering by degrees down to a single mat, as at the commencement. Air must be given,

more or less, *every night* from October to the first or second week in March, as directed in a former part of this work, (see p. 13).

Setting or impregnating the fruit has been practised by me early in the season; and I believe it to be necessary, notwithstanding all that has been said against it, till about the 1st of March. Some have attributed the irregular swelling of the fruit to this operation; but this is a mistake, it being want of strength in the plants, or their carrying too many fruit at one time, which occasions the irregularity. In case of seed-fruit, it is absolutely necessary that care and attention should be bestowed upon this process, or there will be no seed. With a view to procure seed, I invariably raise plants specially for that purpose; which should be grown as strong as possible, and not allowed to mature fruit till their roots extend to the outside of the frame; after which they will be able to swell off, and bring to perfection two fruit each; taking care that the

handsomest be preserved, and that they be impregnated four or five times each, previous to the closing of the blossom. They should not be cut under six or eight weeks, then put into a cool room for a month, when they may be opened, the seed taken out, washed and dried: those only which sink to be retained.

The plan of inlaying the vines of the cucumber practised by some, is now seldom resorted to by experienced growers, and is worse than useless; for as soon as the buried portions take root the original roots perish; and, in the place of one good plant, there will be a dozen weak ones.

When extraordinarily fine fruit is desired, allow the plant to mature one only; but a succession should be permitted, so that the after-fruit do not follow too closely on the first. By this plan the growth will be rapid, provided the plants are in health; and the fruit be much better flavoured than if grown slowly. When long in swelling off, the fruit frequently becomes hard and bitter, and is therefore worthless.

From 75° to 80° are as high as the plant will bear with advantage; and in that temperature fruit will grow faster than in a higher one; the pruning and stopping being attended to as previously laid down.

As to insects, they are seldom met with on plants in health and vigour, but excess of heat and drought will, doubtless, tend to propagate, if not to produce them; and, where they exist, will cause them to multiply rapidly. Every care should therefore be taken to obviate the contending with such evils; and a good depth of mould for the plants to grow in, frequent syringing with water, and slight shading, during a hot sun in the middle of the day, and keeping the internal heat of the bed as moist as possible, without actual injury to the plants, will prevent the appearance of the red spider and the thrip. Canker is engendered by too much wet and too little heat; and the only remedy is a good heat, and getting the bed as dry as possible for a time.

Mildew is the result of too much water and damp, and the injurious vapours arising therefrom engender it; it is also produced by the materials of which the bed has been made, being put together in a foul state. Sulphur is the best remedy, as far as known, but it is a powerful one, and requires caution in its use. The mode of applying it is, to let the affected parts of the plants be sprinkled with it, powdered as fine as possible; and in most instances it will produce the desired effect.

CHAPTER III.

CULTIVATION OF THE CUCUMBER IN THE PINE-HOUSE IN THE WINTER.

The cucumber and the pine are analogous as to the temperature in which they thrive, and where the latter is fruited, the former may be grown to advantage; especially during the period of the year in which out-door culture would be attended with trouble, anxiety, and expense.

Having already given instructions for raising plants in common beds (see p. 16), it is unnecessary to give further directions here on that point.

The description of cucumber I have found most productive thus cultivated, is that called "Kenyon's;" by some known as the "Syon Free Bearer;" it is prolific, and grows to about ten inches long; it is of a pale green, with a

glossy appearance, the flavour is good, and it eats crisp. But though I consider this the best, any kind will answer, except those that grow to a great length. When the cucumber is naturally long, it requires much light, as well as sun, to arrive at perfection.

Sow the seeds for the plants intended to be grown in the pinery on the 10th August, and they will be ready to put into the fruit-bearing boxes on the 10th September, which boxes should be two feet three inches long by one foot three inches wide, and one foot three inches deep, made of inch-thick deal, well pitched over the joints on the inside, and painted on the outside. They should have six holes in the bottom of each, half-an-inch in diameter, to allow of drainage: these holes should be covered with a piece of pot, and about two inches of turfy-peat or light loam. And as the space will be small for the roots to work in, the compost should be rich, consisting of one-half of well-rotted dung, perfectly sweet, and the other half peat-

earth. When the boxes are filled to within two inches of the top, let them be placed on a shelf suspended by iron fastenings to the rafters, so that the plants may be eighteen inches below the glass, against the back-wall of the house, one in each box, and one box under each light. Water should be given when requisite : the time will not matter here, but if syringed every morning and evening it will be of advantage.

In this situation they will progress rapidly, and continue to bear abundantly till February ; and frequently, under good management, till May. When the roots show themselves on the surface of the soil, let an inch of mould be put over them, and another whenever after they require it. Former instructions as to stopping and thinning to be attended to, and one fruit only should be allowed to be borne by each plant at a time ; by which means the plants will be preserved both in health and vigour—besides, the fruit will be of good flavour from quick growth.

CHAPTER IV.

ON THE GROWTH OF THE CUCUMBER UPON AN IMPROVED PIT SYSTEM, WHEREBY FRUIT MAY BE PRODUCED EVERY MONTH OF THE YEAR WITH EASE AND CERTAINTY.

By this system the earth neither gets too much heated, nor becomes so saturated with water as to produce injurious vapours ; it is simple in its management, economical as to fermenting material, and much cheaper, in point of construction and expense of maintenance, than any other method ever yet presented to the public.

In order to give a correct view of the structure, I will describe a pit in use on the premises from which I write ; which will enable any one desirous of adopting the method, to construct one commensurate in extent with the demands upon the grower. And as a simple description will

suffice to develop its particulars, without having recourse to drawings, I shall not burden the work with an additional cost for the ornamental, being satisfied with imparting that which is useful only.

Where a pit is to be erected, it is of importance that it should be sunk two or three feet below the surface of the ground, as it will thus be more convenient for management, as well as better protected frem the weather, especially in winter. Excavate, therefore, as directed for the common pits, in accordance with the dimensions of the pit to be erected, following the particulars of that I am now about to describe.

The pits at the Baroness de Rothschild's are six feet two inches wide, and twenty-nine feet six inches long, from outside to outside; the cavity which surrounds them for the deposit of the lining is one foot eleven inches back and front, and eighteen inches at the ends, making the excavation ten feet wide, and thirty-two feet six inches long.

The dimensions for the pit and cavity having been correctly determined, the earth removed and proper drainage secured, where the soil is such as to require it, commence the brickwork for the pit within which the plants are to grow, by laying a foundation of one course, back and front, fourteen inches wide, but single brick, or four-inch work solid at each end from the bottom to the top, and nine-inch foundation. Let the south or front side be the first to be carried up by laying five courses in pigeon-hole fashion, commencing two-and-a-half inches from the outside of the ground-course, and laying upon them six more courses solid of single brick. This will make twelve courses; and when these are completed, commence a brick-on-edge course inside them, resting two-and-a-half inches from the inner edge of the broad foundation brickwork, admitting, which the space will then do, of a chamber between them of two-and-a-half inches. Eight courses on edge solid, with the mortar used in setting, will bring the inner brickwork

up even with the top of the twelve courses before adverted to. The whole must then be covered over by a course of headers; that is, a course laid cross-ways, which will cover the four-inch wall, the cavity, and the brick-on-edge, thereby forming a chamber between them, from thence to the ground, for the reception of the heated air, as well as for giving stability to the work. Then continue three additional courses of four-inch solid, which will leave a projection of five inches on the inside of the pit for the trellis to rest on. The front or outside will then be sixteen courses high, or four feet. Having finished the front, let the back have five courses of pigeon-holes, and ten of four inches solid; then of the brick-on-edge inside, to form the chamber as before—eleven courses, which will be one foot higher than the other side; the whole must then be covered as before with headers, or cross-ways; then four courses of single brick to finish, making in all twenty-one courses, or five feet three inches high. If the four-inch work

and brick-on-edge be carried up together, it will be of advantage, as the whole may be steadied by the introduction of a few bricks across the air chamber.

The brickwork being completed, let the bearers upon which the lights will have to rest and traverse, be put on, and the space between them filled up with inch-thick tiles laid in cement, so as to arrive at the same thickness as the bearers. The tiles must be laid flush with the brickwork on the inside of the pit, and project one-and-a-half inch over the outer edge all round; in order to throw off the water from the walls—the surface being rendered perfectly even by the cement, which is preferable to a coping of wood, as it is more durable, and as on it the lights will fit to a great nicety, if due care be taken in finishing-off the work. Some of the pits here are so constructed as to copings, as to be now in good condition, after having been in use for a period of thirty years.

The pit of which I have previously given an

outline, as being twenty-nine feet six inches long, has nine lights, and took about 2,700 bricks to construct it, at a cost for bricks, labour, lime, sand, cement, &c., of £7 13s. As to durability, it will last at least fifty years, or more; thus clearly showing a great saving, as compared with frames, which decay rapidly, and constantly want repairs.

In some situations the soil will not allow of an excavation without admitting water into it; and when this is the case, a drain must be formed to carry it off. This is done by sloping the inside of the pit from the back and front towards the middle the whole length, along which a drain is made with bricks, as follows:—two rows are laid flat, leaving a space between them of about four inches, these are covered with another course laid cross-ways, which must be carried out at the front corner of the pit, and under the cavity for the linings (which it drains as well as the pit), the whole excavation slightly inclining towards this point. Where much wet is appre-

hended, a cesspool should be formed, at as short a distance as may be convenient, to receive the drainage, which can afterwards be carried from it, by a lower drain, to any other place where it may be turned to account.

The preparation of the interior is to be carefully attended to. First, by filling it to the height of one foot with any rough material, through which the heat received into the pit, from the linings, will pass freely: nothing can answer better for this purpose than large boughs of trees, laid lengthways of the structure to begin with, and smaller to finish—they should be placed across, or transversely, and cut to the exact width. Upon these lay a little long litter, from fresh dung, to prevent the soil which is to cover them from falling into and filling the interior, which would stop the circulation of air before adverted to; besides, the want of proper precaution in this respect, would be followed by the falling away of the earth from the roots of the plants to their great injury and possible

destruction. Upon the litter should be laid some good turf, one to two inches thick, cut from an old pasture or common, in the same way as for grass plats; this should be laid, grass downwards, as close as possible all over the litter.

Next must be filled in the earth for the plants to grow in: and this must differ from that given as best for common beds—this system is indeed very dissimilar, there being wood, and no dung under the earth in the pit. A good rich soil to commence with, immediately over the turf, is therefore necessary; and for this, cow-dung collected dry, in summer, mixed with that of sheep, if obtainable, and well prepared, is excellent. Let this compost lie exposed to the sun, chopped moderately small, and occasionally turned. When thus prepared, mix it with an equal quantity of oak, or any other leaves, that have been well fermented and rendered sweet, and if not too much decomposed the better; but after fermentation they should be spread out

thin in an open space where they can be frequently turned and moved about.

These manures being properly prepared as pointed out, should be mixed in equal quantities; and to eight barrows-full of this mixture, one of pure white sand, which is of use as a conductor of heat. Nine inches of this compost should be added to the turf, and raised two inches highest along the middle of the pit; tread it lightly all over, and upon this lay a similar quantity of peat-earth to finish, such as recommended for dung-beds; making in all eighteen inches. Should the cow-dung and leaves not be at hand, two parts of rotted horse-dung from an old hot-bed, must be its substitute, previously well exposed and turned in the air, under cover. When earthed, the middle should be the highest from end to end, in order to draw the water from the centre where the plants grow, to the sides where moisture is most required, and where the heat is greatest. The height in the middle, when completed, including the wood,

turf, &c., should be two feet six inches from the ground; thus leaving a space of about a foot above in front between the trellis and the mould, and at the back two feet. The soil being raised in the centre to facilitate the escape of the heat from the sides into the pit, and to draw off the water as previously remarked, it will be one foot, or rather more, under the trellis there. The space between the earth and glass will contain as much heated air as can possibly be required, however cold and severe the weather may be. I have used less depth of wood and soil, in order to have more room between the soil and the glass; but found it caused too dry a heat at top, and that, in consequence, the pit was obliged to be continually sprinkled with water, particularly the walls.

The seed proving, time of sowing, pot treatment, soil, and seed-bed, have been explained in the previous chapters; and the only point now to be treated on is the raising of plants for the pit. These plants are not to be stopped, as

for common dung-bed purposes, but allowed to grow upwards; and as, when they get eight or ten inches high, they will require support, they must be trained to a small stick, of about eighteen inches in length, and tied loosely, in order that the stems may have room to swell without injury. The plants must be kept in the pots until they are eighteen or twenty inches high, which will be about six inches above the trellis; when they are to be finally planted out of the pots into the pit. Whilst in the seed or rearing bed, let them be kept thin to prevent their being drawn up weak. A lively heat, that is from 65° to 75°, with plenty of air, will cause them to grow strong and healthy. By plenty of air, it must be distinctly understood to mean that air shall be admitted to the plants for eighteen or twenty hours out of the twenty-four; and that it should always be given during the night, if not very stormy and high wind. Water should also be given when requisite, as the earth recommended demands more than any other,

and cannot well be overcharged; especially if a quantity of the turfy peat soil, without any other drainage, be placed at the bottom of each pot on the occasion of the second potting off. The plants should present a dewy moisture when the bed is uncovered in the morning, otherwise there will be something wrong; possibly too much *top* heat, which causes a dry husky appearance, especially so if short of bottom heat, or of water. Care should be taken to get the bed ready for the reception of the plants by the time their roots have filled the pots; it being much more important to their well-doing than is generally imagined, that they should not remain in the pots so long as to occasion them to become much matted; which would cause them to suffer greatly when planted out, as the greater portion of matted roots perish after they are transplanted.

Transplanting is the next process in rotation; that is, the putting of the plants into the pit where they are to grow and bear. Holes should

be made under the centre of each light one inch deeper and larger than the ball of earth in which each plant grows ; the stick to which the plant was trained being retained to prevent breakage, the pot should then be reversed, and the earth supported with one hand over the top, when on tapping its rim the ball will drop out without the loss of a single root or a particle of soil, if well-grown in the seed-bed. The plants being deposited in their intended position, one plant under a light, and the ball of roots buried about one inch below the surface, the soil being light and hollow will require to be pressed with the hand to close it firmly round the roots ; the earth of which should be as nearly as possible in the same state of moisture as that of the pit, otherwise the waterings will not penetrate the ball of roots, but pass off to the earth in which it is planted.—See the mode of planting out in dung beds.

The trellis for the reception of the plants may be made with wire, set in a frame of one

inch square wood, the size of each light, the wires to be five inches apart, and forming openings in squares of five inches, crossing each other in a sieve-fashion, or of laths three-quarters of an inch broad, and half-an-inch thick, fastened with small nails or tacks at each crossing; either of which trellises must be well painted before being used. Laths are preferable on account of being flat to rest the vines upon; and especially when the fruit hangs down through the openings of the trellis; those of the size specified are necessary to admit of a man's arm passing through to cut fruit, or any other matter that may call for its introduction.

Stopping.—When the plants are grown sufficiently high, the trellis must be introduced under each light, and the top of the plant brought through the middle of it, its ends resting on the chamber walls, which, as stated under the proper head, (see p. 50,) project into the pit, five inches on each side. When the plant has arrived at three joints above it, remove two

with the finger and thumb, which will shortly afterwards cause it to throw out fresh shoots. When this is the case the top ones must be preserved, and again stopped, alternately; and such as present themselves lower down the stem must be taken off. When those retained get sufficiently long, they must be tied down to the trellis with care, and after making two clear joints each, they must be stopped back to one, so that a single break only may be had from each; by which the strength of the plants will be increased, following the instructions for stopping and thinning given for common frame working, (see p. 7,) taking care not to omit this portion of the duty for two days together, as well as to prevent the infliction of many wounds at one time by severe pruning, a proceeding that would be highly injurious to the plants.

Heat.—That necessary for bringing the cucumber to the greatest perfection, when bearing, is from 70° to 78°; and growing from 65° to 70°. It being a native of a hot climate its structure is

adapted thereto—the mean temperature of the country in which it grows naturally being about 72°. Failures in its forcing occur, in most instances, from the want of a well-regulated top and bottom heat. When the branches are in a heat of 70° or 80° (Fahrenheit) their roots require quite as much; and if they have 90°, the fruit upon them will swell much faster than in a lower temperature. Without heat at the roots, early cucumbers are not obtainable; and if the heat be too low they will remain stationary; but if the heat be short at bottom, and too much at the top, they soon become diseased and unproductive. Keep up therefore a good *bottom heat*, at all times, and let it be sweet and moist, ranging from 85° to 95°, with the top heat as before stated.

Air.—This subject has been already treated of in the chapters on common frame culture, and the same observations will apply here. Fruit-bearing plants in pits as well as frames, should have air at night, during the coldest

weather; and by this treatment they are kept healthy and of good colour.

Watering must greatly depend on the quantum of heat within the pit: as if the heat be low, a very little water must suffice; but if the heat be kept up to the degree recommended, a little water, and often, especially over the brickwork and air-chamber, will cause a beneficial steam to arise. Water should be given at least once in twenty-four hours on the heated air chambers; and at three or four o'clock, if the plants are dry, when shutting down, till half-past five or six, when the covering up takes place: then air is again given for the night.

If the plants present a humid appearance, withhold water; if dry on uncovering, sprinkle the walls. After the middle of January more water must be given, as then the growth will be rapid. In May water should be given twice a day, about ten and three o'clock. Extremes should, however, be guarded against, and a sound discretion exercised to insure success.

Covering the Pits at night, and uncovering them in the morning.—This should not be done until it grows dark, light being essential to the well-doing of the plants; and for the same reason, in the morning the covering should be taken off as early as possible. But though this is the general rule, reference must be had to the state of the weather: as when this is very severe, the beds should be covered in part at three o'clock, and uncovered at nine, following the instructions previously given as to the treatment of plants in the common frames, and the directions for shading, &c.

The internal arrangements finished, the next considerations are the linings and their management; and, as upon the heat of these, entirely depends the working of the pit system, too much attention cannot be given to them. The manure for the linings should be horse dung, or that and oak leaves, in equal quantities. When the materials for the linings are collected, the cavity round the pit must be filled with them,

and the greater the heat, at commencement especially, the better, in order to dry the walls and the earth within the pit, there being no danger of over-heating by this method; and if the top heat should be greater than wanted, air proportioned to counteract it may be given. In four or five days the earth will be sufficiently warm for the reception of the plants; but if they should not be in such a state of forwardness, as to be fit to turn out, and too large to be accommodated in the rearing-bed, they should be put into the pit for a week or so, before they are removed out of the pots. The linings should be regularly turned and managed as to time, additions, and removals of exhausted portions, as directed for those round common frames (see p. 33); commencing at one corner of the pit by taking out as much dung as will allow the operation to be begun; the lining taken out being removed to the opposite point to fill up, where the turning will terminate, adding fresh materials when necessary, and keeping the whole even

with the top, or curb, so that no portion of the brickwork may be exposed to the external air, especially in early forcing.

Should the ground surrounding the cavity be such as will not stand without support, a nine-inch wall, or boards, must be constructed as high as the surface, to prevent its falling in.

CHAPTER V.

ON THE GROWTH OF THE MELON UNDER HAND-GLASSES WITHOUT THE AID OF FERMENTING MATERIALS.

THE melon plant may be successfully grown and fruited under this system; for I have long cultivated it in this manner, and have produced fruit of the finest description and flavour. About the first of May I prepare a bed upon the same principle as that laid down for raising cucumber plants under hand-glasses (see p. 3); differing only in respect of soil, which, in this case, should be pure loam from the surface, chopped with a spade quite fine. The dung at the bottom will allow of the removal of the plants with less injury to their roots, than if they were grown on loam alone.

The seed should be proved, sown, and raised

as recommended for cucumbers under hand-glasses; and if new it will do equally well as if old.

The melon requires rather more heat than the cucumber, but still the instructions for covering apply here, and should be followed. If cold winds prevail in the day, the night covering of hay and mats should be put on the windward side, close to the glass, to shelter it; especially as in this mode of growing, the plants are, in a great measure, dependent on the sun's heat, the full benefit of which should be given.

On hot and clear days give water in the morning when the soil becomes dry, as it should, at all times, be kept free from extremes. As soon as the sun ceases to shine on the hand-glass, let it be shut down close, to retain the heat, covering up an hour before the sun sets. Uncover in the morning as early as the sun reaches the glass, when the plants ought to present dew-drops on the edges of each leaf—the criterion of health—especially if the preceding

day has been warm and dry. The plants thus grown will be stronger than if propagated under frames, and will be fit to transplant into the fruiting bed in three or four weeks.

The system of stopping should be that of the cucumber: after which the plants will bear a strong heat without injury, that is, 80° or 90°, in the day, with air, which should be given on the sheltered side, when required to keep down the temperature to about 85° or 95°. Do not admit much at once, but by degrees, so that the change may be gradual; sudden transitions being highly injurious to the melon.

The successful culture of this excellent fruit greatly depends on the nature of the soil, which should be good loam, three or four inches thick, taken from the surface of a common, or an old pasture. It requires no preparation beyond chopping, and may be used quite fresh; and there is nothing to equal it.

The situation for the plants to grow and bear, after their removal from under the hand-glass,

should be a south border or some well-sheltered spot. If the soil be good loam, it will require no further preparation than digging, and being laid out in width and length proportionate to the cucumber frame, which must be placed over the plants as soon as they get too large for the hand-glasses; raising the middle of the bed about eight inches higher than the sides, to prevent an excess of moisture lodging near the stems.

Supposing that a frame of three lights is to be employed, (after its removal from the cucumber bed,) in which the plants are to be fruited, let three hand-glasses be put over the earth where they are to be planted, to warm the soil; these should be covered at night in the same way as the seed-bed, and be so placed on its ridge, as the plants may be under the centre of each light when the frame and lights are put on. As soon as the bed is ready, take the plants up from the seed-bed, in the same way as recommended for cucumbers, and set four under each hand-glass, if the frame be five feet wide: otherwise

three will be sufficient. Plant them *but little deeper* than when in the seed-bed, as the nearer the roots are to the surface the better; press the soil firmly to the roots, and water a little if requisite. Attend to the covering and uncovering as directed for the seed-bed. Keep them to one leader or shoot, and give them, for a while, but little air during sunshine. They will make rapid progress, and grow much stronger than if covered with frames and lights; 100° of heat may be given with the best results when the plants are well rooted. When they fill the hand-glasses to such an extent as to be no longer covered by them without injury, let the frame and lights be put over them so that the bed may have a fall from back to front of one foot; take off the hand-glass and train the leaders towards the back and front, at equal distances. When they reach to within six or eight inches of the sides of the frame they must be stopped. After this, they will throw out a lateral at every leaf; retain two of

the strongest showing fruit, and when these have their fruit set and swelling, remove daily all the others as they show themselves.

Should the sort of melon be large, or if extraordinary quality be desired, one fruit on a plant will be sufficient. Lay it, while growing, on a slate or tile, stalk upwards; and this will make it grow much handsomer than if on its side. It should be shaded by a leaf whilst growing, but the leaf should not touch the fruit. When full-grown, which will be in about a month after it begins to swell, expose it to the sun. If the plants have been well attended to, they will send forth other laterals showing fruit, one of which can be allowed to remain without injury to the full-grown fruit; the fruit of the lateral will ripen in five or six weeks after the first has been cut, and frequently be finer flavoured than the first.

Watering.—Little water will be required beyond sprinkling, which is necessary during the hot months, to keep the plants free from insects.

About ten o'clock in the morning give as

much water as will moisten the surface of the soil, from a pot with a rose, without wetting the leaves more than can be helped; but discontinue watering a few days before the blossoms open, until after the fruit has swelled as large as a walnut, when it must again be resumed as before, and carried on two or three times a-week up to the period of the fruit ceasing to grow, which will be shown by the plants sending forth fresh laterals. Here again the watering must be suspended for the ripening of the fruit, which will be in about fourteen days from the time it finished growing. When ripe it will give out a fine perfume, and will crack round the feeder or stalk. Cut it in the morning, and let it be put in a cool place until wanted; observing to cut it before it gets too ripe, or it will lose much of its fine flavour. The first crop removed, water as before, decreasing as the days decline, and leaning at all times to an arid or dry state. The less water given the higher will be the flavour of the fruit.

The melons under frames require air, like cucumbers, eighteen or twenty hours out of the twenty-four; give it, therefore, if but in small quantities; and in order to be able to do so, cover accordingly until the heat reaches 70°. In recommending air to be given, I have acted on the supposition that the squares are close puttied, and that the plants have but little air when the lights are shut; it being essential that the cultivator should have perfect control of this element.

Shading is desirable and necessary during a hot sun-shine from about eleven until three, the heat in summer being more than plants under glass can bear without injury; and although shaded, the temperature may be kept up by regulating the air, as well as by not using too thick a covering. Branches of spruce-firs, a little straw or long litter, thinly spread, so as not to exclude the light too much, will answer. Proportionate to the attention bestowed on these minor points will be the success of the grower.

Covering at night and uncovering in the morning have already been touched upon; but from the importance of covering, I must add, that there are but few nights in the year, when it may not be beneficial to do so, as neither the melon nor the cucumber will thrive properly, when the heat differs greatly during the night from that of the day, unless artificial means be adopted to insure the necessary *evenness* of the temperature, which can only be done by judicious covering. Cover, therefore, about an hour before sunset, and uncover about an hour after sunrise, reference being had to the state of the atmosphere.

CHAPTER VI.

THE CULTURE OF THE MELON ON DUNG BEDS.

The seed-bed for raising the plants should be formed in accordance with the instructions given for raising cucumbers, and sown on the 20th of January in fine loam; out of which they can be more readily parted and re-potted than if the soil were rough. If the heat of the seed-bed be properly maintained, and the plants duly attended to, they will be ready for removal out of the seed-pot, singly, about the 27th, into a forty-eight pot, or one of four inches in diameter and four inches deep; the soil as before, with a lump at the bottom, and no other drainage; the plants should be sunk low so as to bring the seed-leaves even with the top of the pots, which should be only half filled. As the roots show

themselves on the surface, they must be covered with earth at intervals till the pot is filled. The fruiting-frame should be twelve feet long, five feet wide, and two feet deep at the back, and one foot six inches in front.

The fruiting-bed must be the same as for cucumbers, prepared sufficiently early for their reception; differing only as respects its centre, which should be a foot lower than the edges, to allow of the increased depth of soil necessary for the melon. The soil should be the surface of an old pasture, about three inches deep, and it may be used immediately, requiring no further preparation or mixture than that of being chopped to pieces, so that the lumps may not be larger than an egg. The hillocks should be so formed as to bring the tops of the plants within eight inches of the glass, when planted; and they should be sufficiently large to admit of four each. When planted, the soil should be kept compact and pressed firmly with the hands, care being taken not to cover a greater

portion of the surface of the bed with earth, than may be absolutely necessary on forming the hills.

The bed must be lined and the heat kept up day and night from 70° to 80°; the dung should be sweet below the frame, but fresh at the top in contact with the wood-work, where the greater heat is requisite.

When the roots show themselves through the hills, cover them at intervals till a ridge of soil be formed from one end of the frame to the other; the surface of the bed, back and front, being kept free from earth, in order to obtain a greater heat from the linings, as well as to insure the plants being dried at pleasure.

Train a leader from each plant till it nearly reaches the sides and ends of the frame before it is stopped; fork over the uncovered surface frequently with a hand-fork; and sprinkle with water every evening, if dry, before covering up, which will give a moist heat during the night, when air must be given at each light, in order that the internal atmosphere may be kept pure. Stop

the laterals two joints beyond the fruit, and give no water to the hills until the melons swell as large as walnuts ; one only must be allowed on each plant, and no more fresh breaks should be permitted, from the setting of the fruit till it is full grown : when this is the case, another fruit may be allowed to set, so that only one fruit shall be swelling on the plant at a time.

The first crop will be fit to cut about the 10th of May (if of a good Canteleupe sort) ; and if well grown it will weigh from 3 lbs. to 5½ lbs.

The second crop of one on a plant should be progressing from the time the first attained its growth to its being ripe. When the first crop is removed, let the frame be raised four inches at each corner, and the bed moulded up back and front ; and the lining kept so high as to dry the frame about an inch above the soil. The covering must be continued, as also the air as before directed. Water whilst the fruit is swelling, from ten to eleven o'clock as occasion may require ; and it will be proper to shade during the

heat of the day. This second crop will be ripe in June and July, and the fruit will weigh from two to four pounds each; and a third crop of one fruit on a plant will be ripe in August, September, and October, of two or three pounds each. Thus thirty-six melons, perfect in growth and flavour, may be had off twelve plants; the latter bearings being the finest in respect of flavour. By this system the plants do not require to be cut back, and consequently are not checked, as must be the case when so dealt with; neither is the risk of their breaking afresh incurred.

In case of its being desired to have fruit large, and of the finest possible flavour, quantity being a secondary consideration, one plant on a hill instead of four must suffice, and one fruit on a plant.

CHAPTER VII.

GROWTH OF MELONS IN PITS, AND TRAINING THE PLANTS ON THE TRELLIS.

This mode of fruiting the melon is believed to be entirely new; and, what is much more important, a great improvement in the mode of producing it, especially at an early period of the year. Thus the melon, like the cucumber, may be raised at a time when success by any other method must be doubtful, however watchful the cultivator may be in attending to its growth. The melon on a trellis may be propagated with certainty, from the ability possessed by the grower of giving the requisite heat and air at all times.

The plants being raised above the soil, and suspended in a warm atmosphere, they do not suffer, as they do when lying on the earth, from

damp and foul air; and as the melon, to be grown to perfection, should not receive a check from the expansion of the seed-leaves to maturity, the system by which this may be easily done is worthy attention. On the trellis plan the grower has so far a control over the elements, as to render his working operations simple and certain—not so on the dung-beds, where purity of air is hardly obtainable at an early period.

Such a bed as that recommended for raising cucumber plants (see p. 3) will do for the melon in every particular; and the seeds for the first crop should be sown on the 20th January, if it be desired to cut fruit in May. The treatment must be the same as recommended when growing plants for dung-beds, save that of stopping; in lieu of which, train the leading shoot till it is ten inches high, which it will be about the 26th of February; when the plant will be ready to put into the pit, and will there ripen fruit by the 6th of May, with proper management, if of the early Canteleupe kind. A week previous to the

plants being ready to turn out of the pots, prepare the interior of the pit by following the instructions under the head of cucumbers on the trellis (see p. 53); except as regards the earth, which, for melons, should be loam, the surface of an old pasture, chopped rather small, as directed for melons on dung-beds.

With this earth, pure and unmixed, fill the pit from the turf upwards, to within one foot of the trellis in the front, and two on the back, and six inches in the middle; being higher there than at the sides, to draw off the water from the stems of the plants.

The surface should be lightly trodden; and when finished, place a couple of sticks in it, about the centre, a foot deep, and draw them occasionally; by which the temperature may be ascertained. When deemed sufficiently warm, the plants may be put out, two under each light, eighteen inches apart, lengthways of the pit; after which put on the trellis; and if the plants pass through it two joints, stop them,

otherwise they must be allowed to grow until they do attain that height and then be stopped. They will afterwards break and throw out laterals; the two uppermost of which, on each plant, must be retained, and led to within six inches of the back and front of the walls of the pit, where they must be stopped alternately, after an interval of three days, to prevent their growth being checked. From these a supply of runners will be had, which must be carefully attended to daily, as to stopping and thinning, until the fruit is fairly set; which, from the arid atmosphere of the pit, it will much more freely do than in ordinary beds; and it will advance afterwards with great rapidity, to the delight and admiration of the cultivator.

Do not allow the fruit to set on all the plants at the same time, but at intervals of a fortnight or so, according to the demand, in order not to have them ripen too near each other. If a succession of crops be desirable, one fruit only on a

plant should be permitted, till it has done growing; and then another, and so on, as directed for common beds. Pits do not require so much watering as ordinary structures do, on account of the earth being shaded by the foliage of the plants resting on the trellis; but the walls and air chambers, back and front, should be sprinkled night and morning, when the fruit is swelling, from the steam of which the plants will be greatly benefited, and their roots moistened near the brickwork, there being no fear of over-watering here from the method of drainage.

Air should be given as for cucumbers, twenty hours out of the twenty-four; and the melon in the pit will then be cultivated in an atmosphere in which it delights—one indeed analogous to that of its native soil, and attainable only by this method. The evening watering of the front chamber, before covering up, will pass off in steam at the back, so soon as the lights are raised for the night air; thus imparting a dewy moisture to

the foliage closely resembling that of nature, and greatly surpassing every other plan of watering one of the most tender of exotics.

The plants should be slightly shaded during a strong sun.

CHAPTER VIII.

ON THE GROWTH OF ASPARAGUS.

Asparagus will thrive in any moderately light soil if well manured, but that which, from long experience, has been found most congenial to its propagation is a fine sandy loam, three to four feet deep, resting on a dry sub-soil.

In November prepare as much ground as may be necessary for the reception of the quantity intended to be grown, commencing by first laying on it nine inches thick of good manure. Then trench the ground three spades deep, mixing the manure with the soil to that depth.

In December and January the whole must be turned over in dry weather; and in February thrown up into ridges one foot deep and two wide. In March the ridges must be turned,

and in April levelled down to the same position as they were before turning, when they will be fit to receive the asparagus roots, which should be two years old; the ground being first lightly trodden over, and formed into beds three feet wide, with alleys of three feet between them.

In these beds plant two rows of roots in April, eighteen inches apart, and eighteen inches between each, by making rows or drills about three inches deep; the roots should be carefully parted and laid in them, one-half to the right hand, and the other to the left, taking care to keep the crowns upright. When planted, level the surface neatly with a rake. Keep the beds free from weeds during the summer; and in November following cover them over with about four inches of the mould from the alleys. In March fork over the surface four inches deep, and in the succeeding November add another four inches from the alleys; and in the subsequent March they should be forked over eight or nine inches deep, and so on until the roots

have been planted three years, at the end of which time they will bear for the table, and the beds will last twenty years or more, but the heads should not be cut after the middle of June. In November the haulm should be taken off, and the instructions for earthing and forking should be followed as previously given.

CHAPTER IX.

ON FORCING ASPARAGUS.

The best method of forcing asparagus is in beds of three feet wide and three feet deep, of such a length as the grower may choose; and if more than one bed, leave a space or trench of two feet wide and three deep between them.

Presuming, therefore, that two beds are to be formed for the purpose of being forced, excavate fourteen feet ten inches wide and three feet deep of the approved length, and having cleared away the earth, build a nine-inch wall round the outside of the excavation up to the surface of the outer ground. The interior will then be thirteen feet four inches wide; divide it into five compartments, viz., three of two feet wide each in the clear, and two of three feet, which, with the four four-inch walls in pigeon-holes, running

from end to end, will occupy the space ; the top courses of the whole to be laid in cement, and finished with a curb of wood four inches wide, and three thick, laid on the four-inch brick-work. This is done in order to rest and fix upon it a span-roof of sixteen inches high to cover the beds ; to the top of which shutters of eight feet long are to be fixed, so as to fall down on each side of the span, to protect the beds from the weather ; and these shutters must be so constructed as to admit, by means of proper hinges, the turning over of either, from the one side to the other, in order to obtain access to the interior of the bed.

The curb, framework, and shutters, should be so made as to be moved at pleasure from one bed to another ; as thus two sets of coverings may be rendered available to carry on forcing alternately in any number of beds. With proper care and attention to painting or tarring, these coverings will last many years.

The next thing is preparing the beds for the

reception of the plants ; the soil should be composed of three-fourths of good light turfy loam, and one-fourth of well-rotted dung from old beds which is sweet ; to these add one-eighth part of sand, and let them be frequently turned and well mixed. The bed must be three feet wide and two feet four inches deep. When finished, tread it lightly, and, in April, plant two rows in each bed of two-years old plants, a foot from the edges, and eighteen inches from plant to plant. Set them in drills as before advised, and level the ground, following the instructions already given as to future treatment. After planting, fill the trenches from end to end, to the level of the earth, with leaves, or sweetened litter, and water the beds slightly every now and then during the summer months.

In the November following the setting, cut off the haulm, and add four inches of good soil to the surface, and more leaves to the linings in the cavities, to keep them up to the proper height ; the whole to be always kept clean

during the summer. In the second November treat them as before; fork over the beds, and add another four inches of soil, which will bring them to the required height of three feet, keeping the trenches filled with leaves. Let them remain in this state for the summer, and in December, two years and nine months from the setting, they will be fit to force, and will last many years in excellent bearing.

About four weeks before the heads are required, put on the frame-work and shutters, take out the leaves from the cavities, and fill them immediately with well-prepared dung, or dung and leaves, which should be quite sweet. These linings will require turning every ten days, or a fortnight at most, to keep them fermenting regularly; fresh litter must be added to the tops as they sink, which will need no preparation.

When the bearing is over, and the covers of the beds removed, do not disturb the linings, as the roots will extend themselves from the beds

into them to their great benefit through the pigeon-holes of the walls.

When the succeeding season arrives, the linings must be taken away and replaced by fresh litter as before; for at that time the buds of the plants will be formed, and cutting of the roots will not matter. In all other respects follow the open-ground treatment.

The great advantage of this system over the common, is the preservation of the plants; for thus treated they will continue to bear abundantly many years, but where taken up for frames they are destroyed after the first forcing, and a large space of ground as well as labour is requisite to supply the annual demand.

When all danger of injury to the plants from frost is past, the curbs, roof, and shutters, should be removed and put by until another year; and if the shutters are wanted for other beds, the beds first forced should be covered over with hoops, mats, and litter, to keep off the frost at night, which would otherwise injure the plants.

CHAPTER X.

FRAME FORCING OF ASPARAGUS.

This plan of forcing is to be conducted under frames on slight hot-beds, eighteen inches or two feet thick, of half decayed manure and leaves, quite sweet and past violent fermentation. On such a bed place about four inches thick of light mould, and when it has become warm take up the asparagus plants, cut off their roots to within five or six inches of the crowns or buds, and place them in rows on the earth, as close together as their roots will allow, without putting them on each other, the crowns being kept upright. When the frame is filled, cover the whole with from four to six inches of soil. The heat should be about 55°, and maintained by slight linings, care being taken not to burn the roots. An old bed that has been previously

used for pines or other things will do well, more especially the improved pit, recommended for cucumbers, is excellent, and surpasses every other where the roots are taken up, as in that they cannot be over-heated. When the heads show themselves above the earth, give as much air as the weather will admit, this being essential to produce colour and good flavour. With proper attention a bed of this description will last in cutting about three weeks.

CHAPTER XI.

ON RAISING ASPARAGUS PLANTS.

Prepare a piece of ground in the same way as recommended for beds to the extent required, on which sow the seeds on the 20th of March, in drills eighteen inches apart and two deep; keep them thin, and the plants will be strong and fit to transplant in thirteen months; but some prefer them two years old before removal. Soil should be added, as for other beds, in the autumn.

CHAPTER XII.

THE CULTIVATION OF SEA-KALE.

The soil best suited to the growth of sea-kale is that recommended for asparagus, as well as the method of preparing, although it cannot possibly be too rich for this vegetable.

On the 25th February sow the seed in drills two inches deep and two feet six inches apart. When they have made two or three rough leaves, let them be thinned so as to be eighteen inches apart. Hoe the ground frequently when the plants are young; they will soon cover the ground, and will do for forcing the following autumn and winter, that is, in ten months from the time of sowing. They will be finer and better than two-year-old plants,

from having been grown to perfection without a check.

There are a great variety of ways for forcing sea-kale. When the leaves die off in the autumn, let them be cleared away, and cover them with large garden pots reversed, the holes at the top being stopped with hay, and a little soil drawn round the rims to keep out the air and insects. Cover them with leaves or litter so as to obtain a gentle heat, the milder it is the finer will be the produce. If leaves, the upper coat should be long litter, to throw off wet and keep the heat regular during changes of weather. Covering about the middle of October will insure sea-kale for the middle of December; and where a succession is required, regulate the commencing of forcing accordingly; the last succession will answer with pots only, provided the air be excluded. The finest I have ever seen was so treated; the seeds sown in February and cut the May twelvemonth following.

Another method is to take up the plants

and force them in frames in the same manner as recommended for asparagus, but the heads will not be so fine by this plan; independently of which, they will be destroyed after the first forcing.

CHAPTER XIII.

ON THE DESTRUCTION OF WOOD-LICE.

The destruction of these troublesome insects, which, in many instances, prove highly injurious to other plants, as well as that of the cucumber, has frequently been the subject of anxious inquiry in public periodicals, as well as in works of this description. It is therefore presumed, that an easy mode of extirpating them must be acceptable and valuable.

Procure some bark from a dead tree of about nine inches or a foot in circumference, and a foot long. Previous to its removal divide it in the middle. When taken off put the pieces together, compressing the edges of the one to admit of its passing a little way within the other, in order that the upper should form a roof to the lower, and thus prevent the water from

entering the cavity within. Tie them at each end, and put them in the frame; the trap resting with the roof part upwards, so that the interior may always be dry. The wood-lice will soon find out this hiding-place, and may be destroyed at pleasure.

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